



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,070	04/21/2004	Leo R. Gauthier JR.	1801-8124	5953

7590 01/11/2005

Office of Patent Counsel
The Johns Hopkins University
Applied Physics Laboratory
11100 Johns Hopkins Road, Mail Stop 7-156
Laurel, MD 20723-6099

EXAMINER

CHIEM, DINH D

ART UNIT	PAPER NUMBER
----------	--------------

2883

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/829,070

Applicant(s)

GAUTHIER ET AL.

Examiner

Erin D Chiem

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,4-15 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 2,3,16,17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/24/2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first and second connectors with respect to one another must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4, 9, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are:

3. **[Claim 4]** The apparatus in claim 1, wherein said **connector is adapted to extend through an opening in a surface of a device, such that said distal end of said bundle of optical fibers one of is recessed in, is substantially flush with, and extends from a surface of said device through which said connector extends.**

4. **[Claim 9]** The apparatus in claim 8, wherein said **connector is adapted to extend through an opening in a surface of a device, such that said distal end of said bundle of optical fibers one of is recessed in, is substantially flush with, and extends from a surface of said device through which said connector extends.**

5. **[Claim 18]** The method in claim 15, further comprising extending said **connector through an opening in a surface of a device, such that said distal end of said bundle of optical fibers one of is recessed in, is substantially flush with, and extends from a surface of said device through which said connector extends.**

6. The recitation cited above regarding the three possible position of the bundle of fibers can locate with respect to the connector (ie., recessed, flushed, extended) is not expressed in the alternative language; therefore, it leads the examiner to interpret that the bundle of fibers can be

Art Unit: 2883

located in three different positions with respect to the connector all at the same time; such state of being of the bundle of fibers is physically impossible with regard to the disclosed description of the claimed invention.

7. The applicant is suggested to clarify the position of the bundle of fiber with respect to the connector by expressing the positions in the alternative language; perhaps separating the different positions in separate dependent claims.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishikawa et al. (US 5,625,730). Ishikawa et al. disclose an optical light guide apparatus comprising:

- A connector (Fig. 1, 3)
- A bundle of optical fibers positioned within said connector (4)
- An epoxy joining said optical fibers together (col. 4, line 9-12), (Fig. 1, 5)
- Bundle of optical fibers has a polished distal end at one end of said connector (col. 8, line 5)
- Wherein the ratio of fiber size to binder particulate size of epoxy is sufficient to maintain the integrity of bundle of optical fibers during polishing of distal end.

Art Unit: 2883

Concerning, the last limitation of the claim 1, since the distal end of the apparatus in Ishikawa et al. disclosure sufficiently maintain the integrity in the disclosed polishing steps; therefore, this limitation is met by Ishikawa et al.

Regarding claim 5, the protective sheath is visible in Fig. 1 (4) and in more detail the in Fig. 7 (430). The protective sheath is made of a polyacrylate-based resin.

Regarding claim 6, in Fig. 1, the disclosure shows two connectors positioned at the end of two different protective sheath and the connectors and protective sheaths and are in the opposite of each other.

Regarding claim 7 and 14, optical fibers that comprise one of a glass and quartz are well known in the art.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii al. (US 5,625,730) in view of Bachmann et al.

5. Ishikawa et al. disclose an optical light guide apparatus comprising:

- A protective sheath (Fig. 7, 430)
- A connector connected to an end of said protective sheath (Fig. 1, 3)
- A bundle of optical fibers position with in said protective sheath and within said connector (Fig. 7, 410)

Art Unit: 2883

- An epoxy joining said optical fibers together (col. 4, line 8-11)
- Coefficient of thermal expansion of the ferrule which is made of a phenol-based epoxy resin having a thermal expansion coefficient of $10E^{-6}(\text{°C}^{-1})$ (col. 3, line 61-65) and an adhesive used to hold the end face of the optical fiber together (col. 4, line 9-11).

But Ishikawa et al. does not disclose the matching coefficient thermal expansion of the epoxy or adhesive and connector.

8. Bachmann et al. teach the method of controlling stress in bonded optics and in Bachmann et al. point out that in choosing an adhesive, one must match the coefficient of thermal expansion of an adhesive to the coefficient of different substrates for the purpose of reducing stress and relative movement between bonded parts.

9. Since Ishikawa et al. are both from the same field of endeavor, the purpose disclosed by Bachmann et al. would have been recognized in the pertinent art of Ishikawa et al.

10. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to apply Bachmann et al. teaching of matching coefficient thermal expansion between the optical components (ie., optical fibers, lenses) to substrates. Although Bachmann et al. teaching is referring to substrates, one of ordinary skill in the art would further apply the teaching of bonding to substrate to other surfaces such as the inner surface of a connector or a ferrule. By matching the thermal expansion coefficient of the adhesive and the substrate, the stress and relative movement between bonded parts are reduced.

6. Claim 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. and Bachmann et al. as applied to claim 8 above, and further in view of O'Rourke et al. (US 6,292,610).

Art Unit: 2883

7. Ishikawa et al. disclose an optical light guide apparatus comprising:

- A protective sheath (Fig. 7, 430)
- A connector connected to an end of said protective sheath (Fig. 1, 3)
- A bundle of optical fibers positioned within said protective sheath and within said connector (Fig. 7, 410)
- An epoxy joining said optical fibers together (col. 4, line 8-11)
- Coefficient of thermal expansion of the ferrule which is made of a phenol-based epoxy resin having a thermal expansion coefficient of $10E^{-6} (^{\circ}C^{-1})$ (col. 3, line 61-65) and an adhesive used to hold the end face of the optical fiber together (col. 4, line 9-11).
- A second connector having a second protective sheath positioned opposite of the first connector and the first protective sheath (Fig. 1)

But Ishikawa et al. does not disclose the matching coefficient thermal expansion of the epoxy or adhesive and connector.

8. Bachmann et al. teach the method of controlling stress in bonded optics and in Bachmann et al. point out that in choosing an adhesive, one must match the coefficient of thermal expansion of an adhesive to the coefficient of different substrates for the purpose of reducing stress and relative movement between bonded parts.

9. O'Rourke et al. disclose a fiber optic probe and coupler assembly having seal which seal the opening to protect the probe (col. 7, line 55-58) and furthermore a threaded portion used to engage threads in the opening (col. 7, line 28-30).

10. Since Ishikawa et al., Bachmann et al., and O'Rourke et al. are from the same field of endeavor, the purpose disclosed by Bachmann et al. and O'Rourke et al would have been recognized in the pertinent art of Ishikawa et al.

11. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to apply Bachmann et al. teaching of matching coefficient thermal expansion between the optical components (ie., optical fibers, lenses) to substrates. Although Bachmann et al. teaching is referring to substrates, one of ordinary skill in the art would further apply the teaching of bonding to substrate to other surfaces such as the inner surface of a connector or a ferrule. By matching the thermal expansion coefficient of the adhesive and the substrate, the stress and relative movement between bonded parts are reduced.

12. And it would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ a seal on the opening of the connector to protect the optical fibers inside from exposure to moisture and other undesired elements in the environment. And it would have been obvious to employ a threaded nut to engage the threads in the opening for ease of installation of the various parts of the connector.

13. Regarding, claim 15, 19 and 20, in disclosing the light guide apparatus above, the references also disclose the method of forming the optical light guide apparatus as claimed in claim 15, 19 and 20.

Allowable Subject Matter

8. Claim 2, 3, 16, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sato et al. and Takanani et al. disclose the teaching of applying the correct adhesive and resin compound to be used in an optical fiber connector. Ishii et al. and Graham et al. disclose the teaching of the physical components, which makes up a disengageable optical connector employing adhesive and resin.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday 9AM - 5PM.

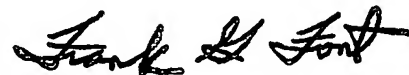
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2883

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erin D Chiem
Examiner
Art Unit 2883

edc



Frank G. Font
Supervisory Patent Examiner
Technology Center 2800